



UNITED STATES PATENT AND TRADEMARK OFFICE

W
UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/907,228	07/17/2001	Richard A. Meyer	M93.12-0254	6314
7590	12/16/2003		EXAMINER	
Steven M. Koehler WESTMAN CHAMPLIN & KELLY International Centre - Suite 1600 900 South Second Avenue Minneapolis, MN 55402-3319			MACK, COREY D	
			ART UNIT	PAPER NUMBER
			2855	
DATE MAILED: 12/16/2003				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/907,228	MEYER ET AL.
	Examiner Corey D. Mack	Art Unit 2855

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 21 November 2003.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-23 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) 4,5 and 15-23 is/are allowed.

6) Claim(s) 1-3 and 6-14 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

 1. Certified copies of the priority documents have been received.

 2. Certified copies of the priority documents have been received in Application No. _____.

 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

 a) The translation of the foreign language provisional application has been received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 11.

4) Interview Summary (PTO-413) Paper No(s). _____.

5) Notice of Informal Patent Application (PTO-152)

6) Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 13 recites the limitation “comprising a *second* axial tension/compression sensing circuit” in lines 5-6. There is no *first* axial tension/compression sensing circuit recited in the claims. It is unclear from the claim whether this limitation is the “first” or “second” sensor. Therefore, the claim is rendered indefinite.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3 and 6-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shull, et al. (US 3,618,376) in view of Sommerfeld, et al. (US 5,969,268).

A. With respect to Claim 1, Shull, et al. disclose a the load cell body comprising: an integral assembly 10 having: a first ring member 14 and a second ring member 16, each ring member having a central aperture 26 centered on a reference axis; and, at least three columns 18, 20, 22, 24 extending from the first ring member to the second ring member parallel to the reference axis Z. Shull, et al. do not explicitly refer to the columns as being “hollow” as a tube. However,

Sommerfeld, et al. discloses a load cell body 10 for sensing forces and moments comprising tubes 20 of varying bore diameters that connect and transmit strain and shear forces between the hub with a concentric annular ring in order to concentrate stresses and adjust sensitivity (column 3, line 44 – column 4, line 60; column 4, lines 42-60). Since Shull, et al. and Sommerfeld, et al. are both from the same field of endeavor, the purpose of disclosed by Sommerfeld, et al. would have been recognized in the pertinent art of Shull, et al. Therefore, at the time the invention was made, it would have been obvious to one of ordinary skill in the art to include in Shull, et al. the teachings of Sommerfeld, et al. for the purpose of varying the sensitivity of the load cell.

- B. With respect to Claim 2, Shull, et al. discloses the claimed invention, including tension/compression sensors S₁₋₃₂ mounted on selected tubes.
- C. With respect to Claim 3, Shull, et al. discloses the claimed invention, except they do not explicitly disclose shear sensors. However, Sommerfeld, et al. teach using strain sensors 40 to measure shear forces (column 3, lines 6-12). Therefore, at the time the invention was made, it would have been obvious to one of ordinary skill in the art to include in Shull, et al., the use of strain sensors to measure shear forces.
- D. With respect to Claim 6, Shull, et al. discloses the claimed invention, including a mounting hub 41 including a first annular rim 44 joined to the first ring member, a second annular rim 42 including a plurality of bores extending there through and a cylindrical support extending between the first annular rim and the second annular rim.
- E. With respect to Claims 7 and 8, Shull, et al. discloses the claimed invention, except they not explicitly disclose that an outer surface of each column or tube comprises opposed, non-rectangular surfaces having sensors mounted thereon. Sommerfeld, et al. discloses a load cell

Art Unit: 2855

comprising tubes 20 having a plurality of opposed, non-rectangular surfaces and wherein sensors 40 are mounted to the opposed surfaces in order to measure strain and shear. Therefore, at the time the invention was made, it would have been obvious to one of ordinary skill in the art to include in Shull, et al., tubes having opposed, non-rectangular surfaces with sensors mounted on them in order to measure strain and shear.

F. With respect to Claim 9, Shull, et al. discloses the claimed invention, including a first pair of surfaces facing in opposite directions and a second set of surfaces facing in opposite directions, the second set of surfaces being substantially orthogonal to the first set of surfaces such that the surfaces of the first set and the second set are alternately disposed about each corresponding longitudinal axis and wherein the sensors are mounted to the surfaces of the first and second sets of surfaces (column 4, lines 36-67).

G. With respect to Claims 10, 11 and 12, Shull, et al. discloses the claimed invention, except they do not disclose eight tubes, wherein opposed, planar or octagonal surfaces of adjacent pairs of tubes are aligned. Sommerfeld teaches both the use of a plurality of octagonal tubes 20 (column 2, lines 57-61) and the alignment of opposed, planar surfaces of these tubes in order to uniformly distribute stress (column 4, line 64 – column 5, line 34). Therefore, at the time the invention was made, it would have been obvious to one of ordinary skill in the art to include in Shull, et al., a plurality of tubes wherein the opposed, planar or octagonal surfaces of the adjacent pair of tubes are aligned in order to uniformly distribute stress in the tube.

H. With respect to Claim 13, Shull, et al. discloses the claimed invention, except they do not explicitly disclose a first set of shear sensors mounted on a first set of opposed surfaces of each tube and a set of tension/compression sensors mounted on a second set of opposed surfaces of

each tube. Sommerfeld, et al. teach the use of a first set of shear sensors 44 mounted on a first set of opposed surfaces comprising a shear sensing circuit for each tube, and a set of axial tension/compression sensors 46, 48 mounted on the second set of opposed surfaces comprising an axial tension/compression sensing circuit for each tube (column 3, lines 6-31). Therefore, at the time the invention was made, it would have been obvious to one of ordinary skill in the art to include in Shull, et al., first and second opposed sensing circuits to measure shear and strain forces acting on each tube.

I. With respect to Claim 14, Shull, et al. discloses the claimed invention, except they do not explicitly disclose that the shear sensing circuit of each of the adjacent pair of tubes are electrically connected to provide an output signal, and the axial tension/compression sensing circuits of each of the adjacent pairs of tubes are electrically coupled to provide an output signal. Sommerfeld, et al. disclose that the shear sensing circuit of each of the adjacent pair of tubes are electrically connected to provide an output signal, and the axial tension/compression sensing circuits of each of the adjacent pairs of tubes are electrically coupled to provide an output signal and an indication of force and moment components transmitted along the tubes (column 3, lines 6-46). Therefore, at the time the invention was made, it would have been obvious to one of ordinary skill in the art to include in Shull, et al., electrically connected circuits of adjacent pairs of tubes in order to provide an indication of forces and moments acting on the tubes.

J. With respect to Claim 23, Shull, et al. discloses the claimed invention, including the sensors 40 comprise bending sensors (column 3, lines 7-12).

Allowable Subject Matter

5. The indicated allowability of claim 23 is withdrawn as this claim was indicated as being allowable in error. Rejection of this claim is outlined above.
6. Claims 4, 5 and 15-23 are allowed.

Response to Arguments

7. Applicant's arguments filed 21 November 2003 have been fully considered but they are not persuasive. Applicant's arguments with respect to claims 1-3, 6, 8 and 9 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Corey D. Mack whose telephone number is (703) 305-3424. The examiner can normally be reached on M-F, 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (703) 305-4816. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3431.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3431.

CDM

Corey D. Mack, Esq.
Patent Examiner
Art Unit 2855

December 9, 2003


EDWARD LEFKOWITZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800